

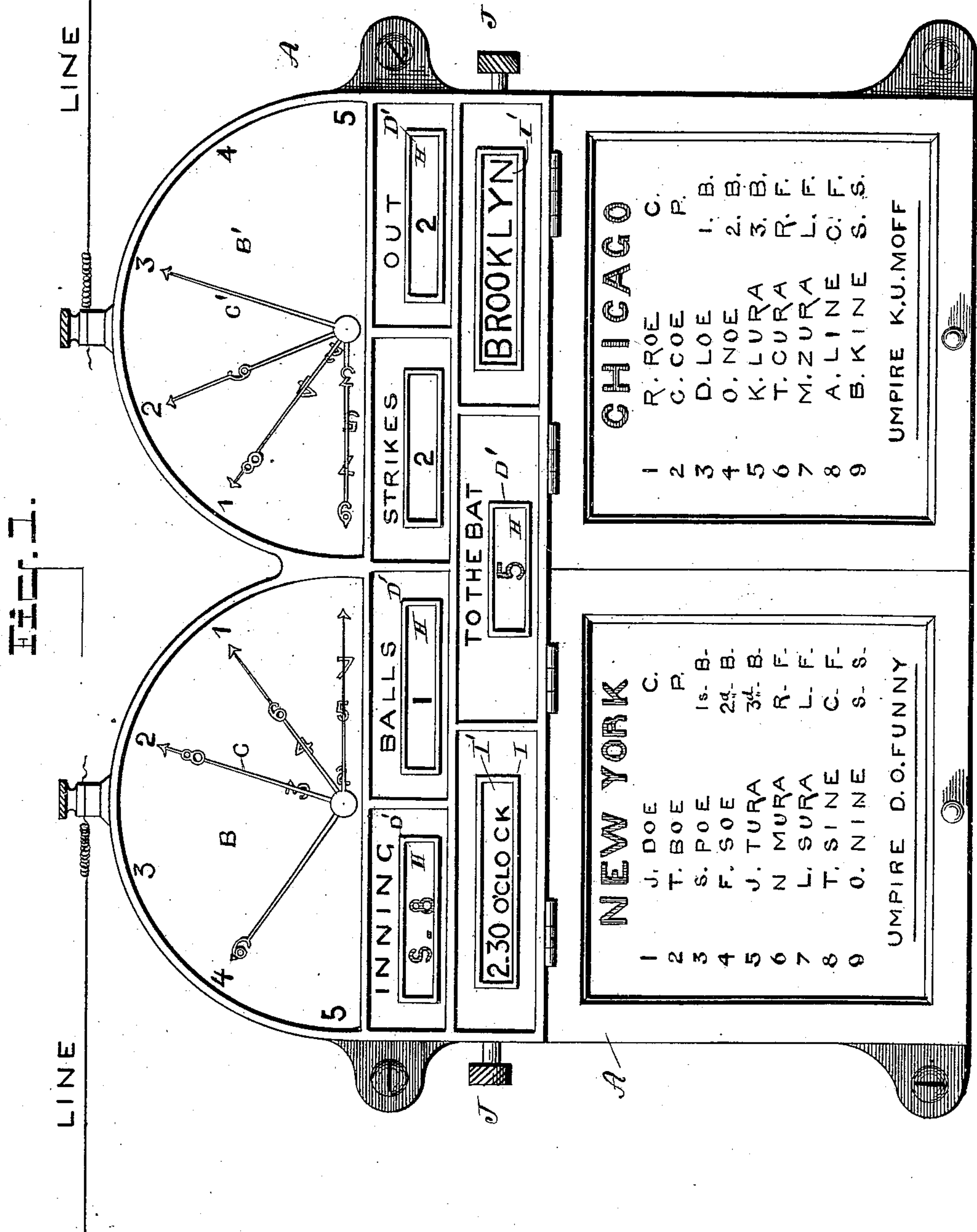
(No Model.)

3 Sheets—Sheet 1.

S. D. MOTT.
ELECTRICAL SPORTING INDICATOR.

No. 444,452.

Patented Jan. 13, 1891.



WITNESSES:

Robt. F. Eaylor
F. B. Murphy

INVENTOR

BY Samuel D. Mott
Duncan & Page
ATTORNEYS.

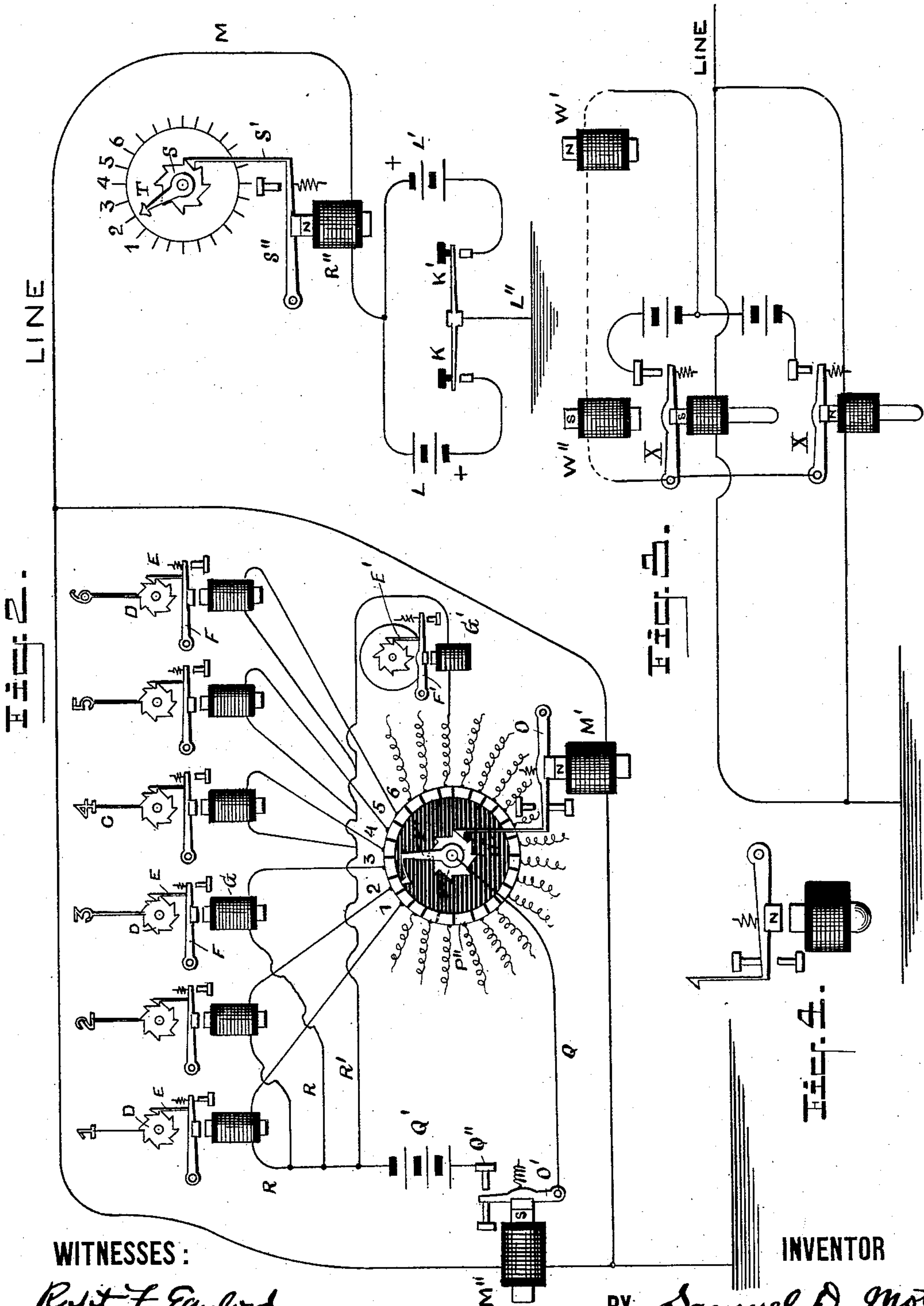
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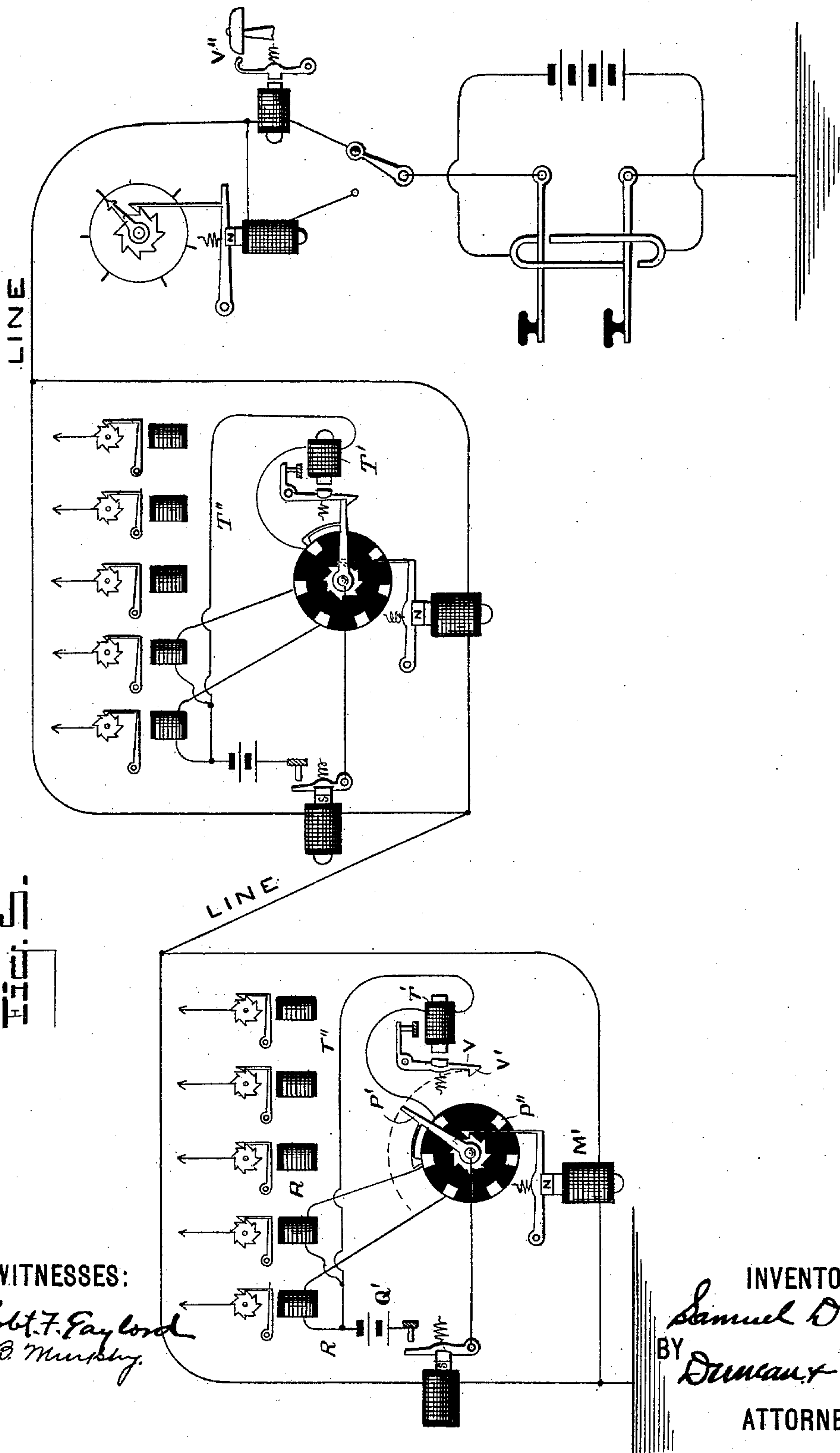
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LINE

LINE

Fig. 3.

WITNESSES:

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INVENTOR

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UNITED STATES PATENT OFFICE.

SAMUEL D. MOTT, OF PASSAIC, NEW JERSEY.

ELECTRICAL SPORTING-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 444,452, dated January 13, 1891.

Application filed June 19, 1890. Serial No. 356,013. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL D. MOTT, a citizen of the United States, residing at Passaic, in the county of Passaic and State of New Jersey, have invented a new and useful Electrical Sporting Indicator and Bulletin, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

10 The object of this invention is to produce a visual indicator with a plurality of changeable parts, which may be operated by an electric circuit to indicate by the proper changes or movements of its said elements the varying conditions of any sporting event, as, for instance, a ball game, a horse-race, or the like.

15 My main purpose has been to devise such an instrument of the kind described that any desired number of them may be connected with a single electric circuit and operated from a given point, which may be on the grounds or track where the event is in progress or at any other point from which information as to the progress of the event may be sent out. In this respect the invention, except as to its ultimate purpose, resembles the ordinary "stock-tickers," which are placed at various points and operated from a central office to produce a written record of stock quotations, sporting events, and general news. It differs, however, from such devices in that it is arranged to exhibit at a glance the condition of a game or other event at any point in its progress, the changeable parts being under the control of the operator, so that as the event progresses they are varied or set to indicate the variations or changes in the condition of the event. For example, I employ an indicating device containing a certain number of pointers or hands and a certain other number of cylinders or traveling bands, portions of which only are exposed through openings in the face of the indicator. The said hands or cylinders are made independently movable and are appropriately designated by numbers or figures to correspond with the contestants and with the several parts or positions in the event which is taking place. With such an instrument the operator may turn any one of the hands to any given point to indicate one fact, or may turn the cylinders to expose any given numbers or

characters, which will indicate a corresponding condition in the event in progress. Various forms of mechanism may be employed for effecting this independent control of the changeable elements of the indicator.

I now refer to the drawings, which illustrate the principle of construction and mode of operation of a practicable and simple means which I have devised for this purpose.

Figure 1 is a front elevation of the indicator employed. Fig. 2 is a diagram illustrating the mechanism and the circuit-connections employed in its operation. Fig. 3 is a diagram of a relay system which may be used in conjunction with the apparatus. Fig. 4 is a detached view of a modified detail, and Fig. 5 is a diagram showing a unison device.

The special form of the inclosing case or box of the indicator proper, as well as the specific mechanical construction of the devices therein, are matters which are largely immaterial, and those shown are merely given in illustration of the principle of the invention. The indicator in the present case is designed to exhibit the progress of a game of base-ball.

A is a suitable inclosing case provided at its upper portion with semicircular dials B B', divided into given spaces numbered from 1 up, as may be desired. A number of pointers, one for each contestant and appropriately designated, are arranged to be moved step by step over these dials. Each pointer is controlled in its movements independently of all the others by a ratchet-wheel, as D, Fig. 2, a pawl E engaging therewith, an armature-lever F, carrying said pawl, and an electro-magnet G. If there be nine contestants on a side, there will be nine pointers C and a like number of pointers C'. The names and numbers of each contestant and the side to which he belongs will be displayed on a card or space therefor at the lower part of the indicator, and the several pointers will bear numbers or marks to identify each one with its appropriate contestant.

D' D' are openings in the face of the instrument, behind which are located cylinders H. These cylinders are independently movable by means of ratchets H', pawls E', armature-levers F', and electro-magnets G', as shown in Fig. 2. Other openings I are provided, behind which are cylinders I', that may

be turned by hand by means of buttons on their shafts J J.

The operator on the grounds where the game is in progress has positive and negative keys K and K', a divided battery or two batteries L L', and an earth connection L'', by means of which he may send at will direct or reverse current impulses over the line M. At each indicator, and forming part of the mechanism contained therein, are two electro-magnets M' M'', connected with the line either in series or in multiple arc. These magnets are polarized or have polarized armatures, so that a current of a direction which operates one will not affect the other, and conversely. The magnet M' is provided with a vibrating armature O, carrying a pawl O'', that engages with a ratchet-wheel P on a stud or shaft that carries a contact-arm P', which in its movement sweeps over and engages successively with a circular series of contact-plates P''. Normally the armature O is attracted toward the magnet; but when the current impulse of given direction is sent over the line the attractive force of the magnet is neutralized and the armature recedes. This permits the pawl O'' to engage with the next succeeding tooth of the ratchet, and when the current is interrupted, the armature being again attracted, moves the ratchet and contact-arm P' one space or step. It will be understood that in practice the number of ratchet-teeth will correspond with the insulated divisions or contacts P''. In this way the arm P' may be shifted to any one of the contacts P''.

The magnet M'', which is, as above stated, magnetized or polarized oppositely to magnet M', normally attracts toward it an armature O', which is in electrical connection by a wire Q with the contact-arm P'.

A local battery Q' has one pole connected with the back stop Q'' of the armature O', while the conductor from its opposite pole is divided into branches R R R', which are brought and connected, respectively, to the contact-plates P''. The armature O' therefore constitutes a circuit breaker or closer which is common to all the local circuits or branches R R', &c.

Each one of the magnets G is included in one of the branches R, while each magnet G' is included in one of the branches R'. These branches, it will be observed, are normally open.

At the operator's instrument is a ratchet-wheel S, operated by a pawl S', an armature-lever S'', and a magnet R'', included in the main circuit. The ratchet S carries a pointer that sweeps over a dial in which are divisions corresponding to the contact-plates P''. Magnet R'' is similar to magnet M', and ratchet S has the same number of teeth as ratchet P. Consequently the position of the pointer carried by the ratchet S should correspond with that of all the contact-arms P'.

This system and apparatus are used as follows: Before a game which is to be indicated

the names of the clubs and the players, with their numbers, are displayed on the indicators, as above set forth. The hand-cylinders I' are turned to indicate any facts which do not change during the course of the game—as, for instance, the time set for the game, the place at which the game is played, and the like. All the pointers C C' are brought to the zero or starting point on their dials and the cylinders H turned to expose blank surfaces. On one cylinder H is printed in successive lines F. 1, S. 1, F. 2, &c., to indicate the first or second half of each inning, and the opening which displays these characters is appropriately designated "inning." Another cylinder carries numbers and is marked "strikes," and still other cylinders carry numbers or characters to indicate the "outs," the contestant at the bat, and so on. As the game proceeds the cylinders are turned step by step to exhibit the number of balls or strikes "called" and the other changes that take place in the game. When a contestant scores a run, the pointer bearing his number is moved to the figure 1, and when he scores more than one run his pointer is moved accordingly. The sum of the numbers indicated by the pointers on either side shows the number of runs scored by that side, so that at a glance it may be seen from the indicator the exact stage and condition of the game in progress. For example, the indicator, Fig. 1, shows that a game is being played in Brooklyn between New York and Chicago; that play was called at 2.30 o'clock; that Chicago is playing the second half of the eighth inning; has made eight runs to ten for New York; that of these runs player No. 1 has made three, No. 6 two, and Nos. 2, 4, and 8 one each. It further shows that No. 5 is at the bat; that one ball has been called; that he has had two strikes, and that there are two "out." This will indicate the general purpose of the device.

The pointers and cylinders are moved in the following manner: Each pointer-magnet has a given number and is connected with one of the contacts P'', bearing a corresponding number. To operate, then, any particular pointer, current impulses are sent over the line by one of the keys K K' of such direction that magnet M', but not M'', will be operated. By this means the pointer T and all the contacts P' will be rotated step by step, and when the pointer T reaches the desired space the operator will know that the contacts P' are in condition to operate the desired pointer-magnet. He then depresses the other key, sending a current over the line that operates magnet M'', but not M'. Each impulse thus transmitted closes the local circuit of battery Q' through the conductor Q, contact-arm P', that one of the branches R connected with the particular contact P'' on which arm P' rests, and the armature O'. The desired number of impulses to bring the particular pointer selected to a given figure on the dial is thus transmitted. The cylin-

der-magnets G' have the same relations to the apparatus as the pointer-magnets and are operated in the same manner.

To insure as far as possible the accuracy of the record made by the instrument, each indicator is provided with some form of unison device. A convenient means for this purpose is illustrated in Fig. 5.

A branch of the local battery-circuit Q', which I have designated as T'', is connected to one of the contacts P'' and contains an electro-magnet T'. Said magnet is provided with an armature V, provided with a catch V' in the path of the contact-arm P', so that if a sufficient number of the impulses that operate the magnets M' be sent over the line all of the contact-arms P' will be arrested at a fixed point, and thus brought into unison. This may be done as often as may be deemed necessary, and when the contact-arms P' have been thus arrested they will be in contact with the terminal of the branch T''. Hence a current sent by the operator in the opposite direction will close these circuits, release the contact-arm from engagement with the armature V, and leave them in position for a fresh start. The release of the arms P' from the armatures V is readily effected by a short impulse of current by causing the catches V' to arrest the arms P' before the armatures O have completed their movement, so that when the armature V is attracted the end of the arm P' slips past the catch.

At the operator's station the main circuit is divided, one branch including the indicating-dial magnet and the other the magnet of a bell V'', so that when the operator is bringing his instruments into unison he may switch in the bell-magnet, which will respond to the impulses sent over the line, while the dial-magnet will not be affected.

Various forms of polarized magnet will answer for use in these instruments. I may employ either the magnetized or polarized core and neutral armature, which core is strengthened by a current in one direction, but neutralized by a reverse current; or the core may be neutral and the armature polarized, in which case the armature may be maintained, separated from the magnet so as to be moved toward it by the effect of a current in one direction only. This arrangement is shown in Fig. 4.

Instead of operating the indicating mechanism directly by magnets M' M'', I may interpose a local battery between the indicating mechanism and the line, which battery furnishes the current for two polarized electro-magnets W' W'', which take the place of mag-

nets M' M'', while the latter merely serves to operate contact-levers X X, that control the direction of the current through the magnets W' W'', as shown in Fig. 3.

As I have before stated, the construction of the appliances for operating the changeable parts of the indicator may be greatly varied, those which I have herein shown being but one of several forms which I have devised for this purpose.

What I claim is—

1. In a sporting-indicator, the combination, with two or more movable pointers and cylinders adapted by changes in their position to indicate or display the various conditions of a game, electro-magnetic step-by-step motive devices for actuating the same, included in normally-open independent local circuits, and a circuit-closer common to all of said circuits, of a switch for closing the break in any one of the local circuits, a polarized electro-magnet in the main line with which the instrument is used, actuated by currents therein for moving or operating the said switch, and an oppositely-polarized electro-magnet in said main line, adapted when actuated by current impulses to operate the circuit-closer common to all the local circuits, as set forth.

2. The combination, with two or more movable pointers and cylinders constituting the display parts or elements of a sporting-indicator, electro-magnetic motive devices for imparting an intermittent movement to the same and each included in a normally-open branch of a local circuit, of a circuit-closer for connecting any one of said branches with the local circuit, a polarized magnet in the main circuit for operating or moving said circuit-closer, and an oppositely-polarized magnet, also in said main circuit, for making and breaking the local circuit and that one of its branches which is closed by the circuit-closer.

3. The combination, with two or more pointers and cylinders, an electro-magnetic motive device for each included in a normally-open branch of a circuit, of a series of contacts forming the terminals of such branches, a contact-arm adapted to sweep over said terminals and close the breaks in the branch circuits successively, a polarized main-circuit electro-magnet for moving said contact-arm, and an oppositely-polarized magnet in the main circuit for connecting with the branch circuits and disconnecting therefrom a local battery, as set forth.

SAMUEL D. MOTT.

Witnesses:

FRANK B. MURPHY,
HENRY F. NEWBURY.